Chapter 20

Short-Term Uses versus Long-Term Productivity of the Environment

To facilitate comparison of the build alternatives, the National Environmental Policy Act (NEPA), 42 United States Code (U.S.C.) § 4321 *et seq*., requires that a discussion of environmental consequences address the short-term uses of environmental resources compared with the long-term productivity of the environment. NEPA recognizes that short-term uses and long-term productivity of the environment are linked. The uses of environmental resources—or impacts on those resources—have corollary opportunity costs. These costs relate to lost opportunities and productivity that could continue into the future. This chapter discusses whether the short-term uses of environmental resources by the proposed rail line would affect (either positively or negatively) the long-term productivity of the environment. Short term refers to the analysis period for the proposed rail line (the 20-year period from 2018 to 2037). Long term refers to an indefinite period beyond 2037 for the proposed rail line.

Short-term uses of the environment associated with the build alternatives are generally the same as the impacts described for each resource in this Draft EIS. These impacts include both temporary and permanent use of the physical environment resulting from the proposed rail line. In considering the effect of these uses on long-term productivity, three main types of long-term productivity area considered: land use productivity, water resources productivity, and biological resources productivity. The relationship between short-term uses and long-term productivity would not be appreciably different among the build alternatives.

20.1 Land Use Productivity

Construction and operation of any build alternative would affect land use primarily through the acquisition and conversion of land to railroad use and the displacement of capital improvements in the right-of-way during construction. The right-of-way for any build alternative would separate contiguous properties. The longer build alternatives would require more right-of-way acreage than the shorter build alternatives and would have greater impacts on land use. Construction of the proposed rail line would convert undeveloped land and land used for public recreation, wildlife habitat, agriculture, and grazing to rail operation. Most of the land within the rights-of-way is privately owned (79.7 percent of the total acres in the rights-of-way), and grazing land makes up the vast majority of the land use (85.5 percent of the rights-of-way). Approximately 3 percent of the rights-of-way consists of prime farmland (if land is irrigated), and approximately 22 percent consists of farmland of statewide importance. OEA estimated that about 369 acres (13 percent of Decker Alternative) to 1,189 acres (28 percent of Tongue River Road East Alternative) of prime farmland or farmland of

statewide importance could be directly affected, depending on the build alternative. The productivity loss related to farmland and soils supporting agricultural activities would be limited primarily to the areas within the right-of-way disturbed by land clearing, grading, and construction. OEA assumed that the right-of-way would never be returned to its current land use and condition, so impacts on land use and soil productivity would be permanent, and the long-term productivity of the land would be lost.

The acquisition and conversion of recreational land to right-of-way could limit access to recreational land on either side of the right-of-way for any build alternative. Additionally, construction and operation of the proposed rail line would result in impacts on recreational resources by introducing visual and noise disturbances. Recreational lands affected by the build alternatives include national, state, local, and private designated recreational areas that are used for hunting, fishing, hiking, wildlife viewing, horseback riding, and other activities. Impacts of the proposed rail line on recreation would include temporary and permanent loss of access, noise disturbance, visual disturbance, and disturbance of wildlife and game animals. In-water construction in any fish-bearing streams would also affect fish. Wildlife would initially avoid the proposed rail line but would most likely habituate to rail operation. Noise from train operation would permanently affect recreational resources. Where the right-of-way would require the acquisition of recreational lands or where the right-of-way would block access to recreational lands, recreational use and the long-term productivity related to the recreational use would be lost.

20.2 Water Resources Productivity

Wetlands, groundwater, floodplains, and surface waters contribute to long-term water resources productivity by providing habitat for aquatic and terrestrial species, filtration, flood attenuation, recharge, and general water use (e.g., recreation, irrigation). Construction of the proposed rail line would result in short-term disturbances and permanent impacts on water resources. Construction would require only minimal consumption of surface water or groundwater resources when compared with available resources and existing water rights volumes that have been approved by the Montana Department of Natural Resources and Conservation. Wetlands, surface waters, and floodplains that would be filled would not recover in the short term, and long-term productivity related to those resources would be lost.

The permanent loss of wetland functions and values through placement of fill and alterations to wetland vegetation, hydrology, and water quality would affect long-term wetland productivity. Impacts on wetlands would vary by build alternative and could range from 8.1 acres to 33.3 acres. The intensity of impacts on wetlands would be a function of not only the area of wetland filled but the quality (functions and values) of the affected wetland. In addition, wetlands adjacent to the right-of-way could experience indirect impacts through fragmentation. Wetlands filled during construction would most likely not return to wetlands, and fragmented wetlands could experience changes to their vegetation composition and hydrology. Although compensatory wetland mitigation requirements would replace

permanent wetland loss, there could still be long-term productivity loss for wetlands that are not jurisdictional under the Clean Water Act and that do not require mitigation. OEA assumed that the right-of-way would never be returned to its current land use and condition, so impacts on wetlands would be permanent, and the long-term productivity of wetlands would be lost.

Long-term impacts on productivity from the proposed rail line could result where the rail bed or access roads would be near or adjacent to water bodies. Construction and operation could affect short-term productivity because surface water runoff would transport fine-grained sediments, pollutants that could alter water body chemistry, and dust from access roads; thus affecting water quality. The number of surface water crossings would range from 62 to 189, depending on the build alternative. Crossing structures (bridges, culverts, and drainage structures) could physically alter surface waters, resulting in changes to channel hydraulics and morphology, which would last until dynamic equilibrium within a stream channel is established. Culvert and bridge placement in surface waters would cause short-term productivity losses for aquatic species, but the long-term, permanent presence of culverts and bridges would affect the long-term productivity of surface waters where changes to surface waters, such as temperature increases from riparian vegetation removal or altered aquatic habitat, could affect aquatic species' productivity.

Construction and operation could result in long-term impacts on groundwater due to surface soil compaction and the creation of impenetrable surfaces, thereby permanently reducing or impeding infiltration. These impacts would be limited to the footprints of the rail line and associated facilities. Construction or operation could degrade groundwater quality if a contaminant is released and then migrates into the aquifer. However, a release is unlikely because of federal regulations and protocol on the transport and storage of hazardous materials. OEA assumed that the right-of-way would never be returned to its current land use and condition, so infiltration impacts on groundwater would be permanent, and the long-term productivity of groundwater recharge along the right-of-way would be lost.

Construction and operation could result in long-term impacts on floodplains by permanently filling floodplains or clearing floodplain vegetation to support the rail bed, culverts, and bridges. Impacts on floodplains would vary by build alternative and could range from 9 to 113 acres. In addition, the placement of culverts and bridges could have a long-term impact by altering flood-flow dynamics. These impacts would include a decrease in floodplain storage capacity and the diversion of flood flows, constriction of flood flows, and a decrease in floodplain floodwater retention. State and federal floodplain regulation design standards would reduce and minimize the impacts on regulated floodplains, reducing any impacts on long-term productivity. However, because the right-of-way would never be returned to its current land use and condition, effects on floodplains would be permanent, and the long-term productivity of floodplains would be lost.

20.3 Biological Resources Productivity

Vegetation, wildlife, and fish resources contribute to biological productivity, and the long-term productivity of these resources provides ecological and recreational benefits. Construction of the proposed rail line would result in some short- and long-term impacts on vegetation, fish, and wildlife resources. Four federally and state-listed endangered species are in the project area: the pallid sturgeon, interior least tern, whooping crane, and black-footed ferret. No federally listed threatened or endangered plants are in the project area. Bureau of Land Management (BLM) and Montana State special-status plants are documented in the rights-of-way for the Moon Creek Alternatives and Decker Alternatives. BLM and Montana State special-status wildlife and fish are also documented in the project area.

During construction, vegetation would be removed from the footprint of the proposed rail line and from land associated with infrastructure (communication towers and road relocations). Vegetation in those areas would be permanently lost or considerably altered. Temporary vegetation loss would be short term in some areas and long term in others, depending on the type of vegetative cover. Natural recovery and assisted restoration of vegetation would take place outside the footprint of the proposed rail line after construction activities cease. However, forested areas would require a longer time to regenerate, which would be considered a long-term habitat loss, even with restoration. Impacts on vegetation would vary by build alternative and could range from 1,899 to 4,111 acres within the rights-of-way. Impacts on forested vegetation would vary by build alternative and could range from 362 to 522 acres of conifer and deciduous woodlands within the rights-of-way. OEA assumed that the right-of-way would never be returned to its current condition, so impacts on vegetation would be permanent, and the long-term productivity of the vegetation would be lost.

During construction, habitat would be removed from the footprint of the proposed rail line and from land associated infrastructure. This habitat would be permanently lost, altered, degraded, and fragmented. Construction would also increase wildlife mortality, change species composition, and displace wildlife, which could reduce species' reproductive output, survival, and productivity. Construction impacts on habitat (loss, alteration, degradation, and fragmentation) would continue through operation of the proposed rail line. Rail operation would also increase mortality from collisions with maintenance vehicles, trains, power lines, and communications towers and would sustain wildlife displacement impacts by creating a barrier to wildlife movement. However, all non-special-status wildlife species that would be affected by the proposed rail line are stable or widespread and abundant, and it is not likely that these impacts would result in any long-term impacts on wildlife productivity.

OEA determined that construction and operation of the proposed rail line *may affect, but is not likely to adversely affect* the black-footed ferret, interior least tern, and whooping crane; OEA determined there would be *no effect* on pallid sturgeon (Appendix L, *Biological Assessment*).

Impacts on fish and fish-bearing streams from rail line construction and operation would include increased *sedimentation* and *turbidity*[1] from disturbance of the ground surface and removal of riparian vegetation, loss or alteration of stream and riparian habitats due to the placement of structures, alteration of stream hydrology, degradation of water quality, and blockage of fish movement. The extent of impacts would depend on the build alternative and number of crossings. All fish-bearing streams would be crossed by free-span bridges with no in-channel structures, except where either of the Decker Alternatives would cross the Tongue River. Free-span bridges would significantly reduce impacts on fish and fish habitat. Construction would result in short-term, localized impacts on fish populations during the construction period. The bridges would be permanent features that could have some impacts on long-term productivity (such as riparian habitat removal).

[1] Terms italicized at first use are defined in Chapter 25, *Glossary*.